Miticide Rotations

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2012
Two-spotted Spider Mite Life Cycle

Development complete in 5-19 days

Females can produce up to 100 eggs

Egg

Larva

Protonymph

Deutonymph

Adult

Spidermite populations are held in balance by natural enemies, weather and host quality.
Two-spotted Spider Mites Plant Damage

- Feed mainly on the underside of the plant leaf surface
- The mite’s stylets penetrate plant cells and suck out their contents
- Damage is first observed as pale green mottling due to the loss of chlorophyll from damaged cells
- With continued feeding, leaves turn yellow with brown areas
- Severely damaged leaves may drop
- Stunting and ultimately death of the plant are possible
TWO-SPOTTED SPIDER MITE

Two-spotted spider mite adults and eggs

Red phase two-spotted spider mite

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## Longevity and Reproductive Capacity of Two-spotted Spider Mite*

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Longevity</th>
<th>Eggs/Day</th>
<th>Total # Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>80° F</td>
<td>18 days</td>
<td>2.4</td>
<td>43.2</td>
</tr>
<tr>
<td>86° F</td>
<td>19 days</td>
<td>8</td>
<td>152</td>
</tr>
<tr>
<td>90° F</td>
<td>30 days</td>
<td>4-6</td>
<td>120-180</td>
</tr>
</tbody>
</table>

*Source: 1991 Koppert Biological Systems
Mite Management Strategy

● Use miticides with different modes of action in rotation
● Thorough spray coverage is essential to getting good mite control. Coverage can be evaluated using water sensitive paper.
● Use surfactants with most miticides.
● If good coverage is difficult to achieve (thick or waxy foliage), use systemic or translaminar products w/ surfactant.
● Application timing depends on mite pressure and time of year --under heavy pressure apply miticides every 7-10 days. Apply each product 2-3 times back to back; follow label recommendations for time between applications. (To reduce heavy infestations, start w/ horticultural oil, then begin miticide rotation if environmental conditions permit.)
● Avoid overuse of one miticide.
# Mite Management Tools

<table>
<thead>
<tr>
<th>ADULT/IMMATURE</th>
<th>IMMATURE/EGGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6 ) Avid®*</td>
<td>(10B) Tetrasan®*</td>
</tr>
<tr>
<td>(25) Floramite® SC</td>
<td>(10A) Hexygon® DF</td>
</tr>
<tr>
<td>(13) Pylon®*</td>
<td>(10A) Ovation™</td>
</tr>
<tr>
<td>(21) Sanmite®</td>
<td>(23) Judo™*</td>
</tr>
<tr>
<td>(20) Shuttle™</td>
<td>(21) Akari®</td>
</tr>
<tr>
<td>(23) Judo™*</td>
<td>(20) Shuttle™ O</td>
</tr>
<tr>
<td>(NA) Soaps/Oils</td>
<td>(25) Floramite® SC</td>
</tr>
<tr>
<td></td>
<td>(NA) Soaps/Oils</td>
</tr>
</tbody>
</table>

**Rotation Strategy-**

1st Target/Spray: Mobile Stages (adults / immatures) – Avid, Sanmite or Pylon
2nd Target/Spray: Immature stage & eggs (Tetrasan, Hexygon, Judo)

* Product has translaminar activity
Mite Rotation for Low – Moderate Populations

1. Avid® or Avid + Insecticidal Soap (2 applications)
2. TetraSan® (14 day application restriction – 2 applications/crop)
   - Need to make 2 applications of another MOA group before rotating
3. Sanmite® SC (1 application if needed)
4. TetraSan (if needed)

Mite Rotation for Moderate – High Populations

1. Pylon® (GH use only) (1-2 applications/crop ~Limited to 3 applications/crop) or Sanmite
2. Hexygon® (1 application /crop) or TetraSan or Judo™ (test for plant safety)
3. Avid (2 applications)
4. Pylon (GH use only) (1-2 applications/crop ~Limited to 3 applications/crop) or Sanmite

**Check labels for plant use safety and use limits**
Broadmite damage (*Salvia*)
Cyclamen Mite Damage
Broad and Cyclamen Mite Controls

- Not all miticides control broad mites
- Avid®, Judo®, Pylon®, and Sanmite®/Akari® will control broad mites
- Cyclamen mites and Eriophyid mites can be harder to control and identify since they are hidden in buds

### Broad Mite
- Abamectin (Avid)
- Chlorfenapyr (Pylon)
- Fenpyroximate (Akari)
- Spiromesifen (Judo)
- Pyridiben (Sanmite)

### Cyclamen Mite
- Abamectin (Avid)
- Chlorfenapyr (Pylon)
- Fenpyroximate (Akari)
- Spiromesifen (Judo)
● Active Ingredient: Abamectin
● MOA Group: 6 (Glycoside)
● Target Pests: Mites (Spidermites, Broadmites, Cyclamen) Leafminer, Whiteflies, Aphids, Thrips
● Rate: 4 – 8 oz/100 gal (Min. 8 oz/A, Max. 16 oz/A, Foliar Spray 100-200 gal water/A)
● REI: 12 hrs – Warning Label
● Application: 7 day interval, 2 to 3 applications then rotate
● A Standard in mite and leafminer control!

● Translaminar activity, penetrates to leave a reservoir of active material inside the plant cuticle

● Rainfast within hours of application

● Leaves no unsightly residue & has very little odor

● The only miticide labeled for control of Aphids, Whiteflies and Thrips
Control of Two-spotted Spider Mite on Marigold*

*Source: Smitley 2003

Rates per 100 gal
One application

*Control

- Avid® 4oz
- Floramite® 4oz
- Hexygon® 2oz

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